

Great Plains Energy Expo “Moving Power to Market-Transmission Challenges and Opportunities”

It is my pleasure to be here with you today to discuss “moving power to market”. A strong, reliable and efficient electric system is critical to securing energy independence for the United States, and ensuring strong economic growth for future generations. The energy resource potential North Dakota can play an instrumental role in making that happen.

This event exemplifies the kind of dialogue, leadership, and commitment that is needed to address tomorrow’s energy challenges.

I am sure my distinguished fellow panelists will talk about rate structures, cost allocation, and transmission rights. I won’t deny that these are the meat of the issue, but what I would like to try to do is present this topic from a non-technical view.

I see three major challenges:

1) *“We need a national vision for our electric grid, to meet our goals for delivering reliable, environmentally sound, and affordable electric power to consumers, while recognizing local impacts.”????*

In the electricity world, the consumer wants his or her light to come on. (Period.) An increasing number of consumers care about how their electricity is generated, but most still are unaware of what it takes to get those electrons to their light bulbs.

Yet, as we begin talking about a reliable, environmentally sound, and affordable electricity future, we do not have the option of leaving our transmission needs out of the debate. Moreover, we need to be developing, not just a vision for the bulk transmission system, to assist in integrating renewable resources, demand-side management, distributed generation and efficiency measures, as well as, improved load management.

As the Nation sets goals for changing its generation sources to increase renewable energy sources, such as the unparalleled wind energy development opportunities here in North Dakota, or create more options for clean coal development or geothermal energy, we are recognizing that most of these resources will be located far from the major electricity demand centers.

Until recently, the Nation’s electric grid developed from islands of generation serving specific loads. Now, however, new transmission lines are needed to access more distant resources and bring them to market for the benefit of the Nation. The challenge is to bring these clean energy benefits to meet the Nation’s needs while still fairly considering the human and natural environments through which such transmission needs to be built.

To meet this challenge will require increasing cooperation and consultation among local, State, regional, and Federal entities, and also, among individuals and groups with varying perspectives. Industry must change the way it interacts with public when siting new infrastructure. Public outreach and education early in the planning stage can prevent problems down the road and prevent development delays. Stakeholders will continue to play a role in infrastructure development and must be engaged from the beginning.

2) *"It is about advancing technologies and people."*

My first challenge really highlighted the importance of including the full spectrum of stakeholders in the planning process. The second challenge is to advance technologies and to add reliability and efficiency to the transmission hardware, while ensuring there are enough trained professionals to operate these systems.

Technologies can play an important role in helping operators and engineers do their work more efficiently and effectively, but the challenge of assuring the human capital needs is real. For instance, the nation's power engineering education system is at a critical point. Without strong support for strategic research in power systems engineering and without qualified replacements for retiring faculty, the strength of our nation's university-based power engineering programs will wane, and along with them, the foundation for innovation in the power sector to meet the energy challenges of the 21st century. Likewise, there is an important role in addressing the need for the trained and certified operators and technicians, who run and maintain this great, national energy system.

One project of potential interest is the development of the Electricity Infrastructure Operations Center (EIOC) at Pacific Northwest National Laboratory. This past spring, I had the pleasure of visiting this new user-based facility dedicated to energy and hydro power research, operations training and back-up resources for energy utilities and industry groups. The EIOC bridges the capabilities of today's grid control center to tomorrow's energy operations, which involve a more complex set of resources and enhanced operating paradigms. Not only does the EIOC help define the current performance of the overall energy system, the Center also focuses on how specific technologies or other operational changes can improve it.

3) *"We live in a networked world."*

The third major challenge to ensure the connectivity of a broader electric power grid. Utilities are interconnected; the electric grid is a network. Thus, your reliability also depends, in part, on your neighbor's reliability.

Communications across broader areas is essential.

One project that should help in this regard is the North American Synchrophasor project. The Department is working with the utilities and NERC to obtain real-time data on certain key system parameters (e.g. voltage; current; phase angle) and then using this data to help the operators visualize the system and be able to respond to potential problems. This is also important because it offers a broader geographic view than what is currently available.

In addition, incorporation of solid-state devices such as advanced breakers and fault current limiters help mitigate faults before they propagate through the system, minimizing the impact of disruptions.

So, what is the role of North Dakota?

1) Regional planning

North Dakota has done a good job of regional planning, and this process needs to continue.

For instance, the participation in CAPX2020 is a real step forward for this initiative.

2) Training centers

Earlier this year, the Secretary of Energy designated Bismarck State College as a National Power Plant Operations Technology and Education Center. Bismarck's program reputation in electric power generation, transmission, and distribution technologies; its expertise in both onsite and Internet-based training; and its responsiveness to power industry's workforce and training requirements are examples of why this center deserves national recognition. Bismarck distinguished itself as a center of excellence in providing cutting edge degree programs that directly impact our common goal of realizing continued, reliable electricity delivery.

But once again, if we are to remain in the forefront of our energy challenges, we can not be complacent. We need to be constantly reevaluating and improving ourselves.

3) Partnerships

The call for grid modernization is coming from all levels of leadership. But neither government nor industry alone can satisfy the Nation's electric infrastructure needs.

Modernizing the grid will involve time, resources, and unprecedented levels of cooperation. The nation's aging electric infrastructure, and the increasing requirements placed on it, have contributed to inefficiencies and electricity congestion in several regions. These conditions could lead to more outages, more power quality disturbances,

higher prices, and the less efficient use of resources. We must act now or risk even greater problems in the future.

Thank you for your time and attention. I look forward to working together with you to make the reliable, efficient electricity system of the future a reality.